REMARKS

Please reconsider the present application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering the present application.

I. Disposition of Claims

Claims 1 and 2 are currently pending in the present application.

II. Rejection(s) under 35 U.S.C § 103

Claims 1 and 2 of the present application were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,557,154 issued to Erhart (hereinafter "Erhart") in view of U.S. Patent No. 5,731,702 issued to Schroeder et al. (hereinafter "Schroeder") and further in view of U.S. Patent No. 4,456,934 issued to Wedman et al. (hereinafter "Wedman"). For the reasons set forth below, this rejection is respectfully traversed.

The present invention is directed to an absolute position detecting device for detecting an absolute position along the axial direction of a linear actuator. With reference to the exemplary embodiment of the present invention shown in Figure 1 of the present application, an absolute position detecting device **10** for a linear actuator **1** (having a motor **2**, an output shaft **3**, and a conversion means **4** for converting for converting output rotation of the motor **2** to linear motion of the output shaft **3**) comprises (1) a rotary absolute sensor that detects an absolute rotary position per rotation of the motor **2**, (2) a linear absolute sensor that detects an absolute linear position within a set

range of movement of the output shaft **3**, and (3) calculation means for calculating an absolute linear position of the output shaft **3** based on a combination of an output of the rotary absolute sensor and an output of the linear absolute sensor.

As explained in paragraphs [0030] and [0031] of the present application and with reference to Figures 1 and 3 of the present application, the method for calculating the absolute linear position in the absolute position detection device **10** is described as follows. Figure 3 shows (1) a rotary absolute signal **A** indicative of the absolute rotary position at each rotation of the motor **2** and (2) a linear absolute signal **B** indicative of the absolute linear position per linear stroke pitch. With each rotation of the motor **2**, the actuator output shaft **3** is moved linearly in the axial direction **3a** by an amount that is in accordance with the lead pitch of a ball-screw **41**. If the amount by which the output shaft **3** is moved per rotation of the motor **2** and the detection pitch (*i.e.*, one linear stroke pitch) are not equal, and if signals **A** and **B** are combined, even if the output shaft **3** moves within the space of the movement interval until the amount by which the output shaft **3** is moved per rotation of the motor **2** and the detection pitch are equal, at no point of the movement are signals **A** and **B** the same. Thus, it is possible to realize a linear absolute sensor that, based on the combination of signals **A** and **B**, can detect the absolute position of the output shaft **3** in the axial direction **3a** over a long stroke. Accordingly, claim 1 of the present application requires that the range of movement of the output shaft over which the absolute linear position can be detected by the linear absolute sensor is different from a distance by which the output shaft is moved per rotation of the motor as converted by the conversion means.

Erhart, in contrast to the present invention, fails to disclose an arrangement as

recited in independent claim 1 of the present application. Erhart, which is directed to an electrically powered, bi-directional linear actuator in which the threads of the drive member and its follower are not exposed and where all force bearing components are concentrically connected to a load (*see* Erhart, column 2, lines 9 – 14), is altogether silent as to a range of movement of the purported output shaft (**25** in Figure 2 of Erhart) over which the absolute linear position can be detected by an linear absolute sensor (not disclosed in Erhart) that is different from a distance by which the purported output shaft (**25** in Figure 2 of Erhart) is moved per rotation of the purported motor (Figure 1 of Erhart) as converted by the purported conversion means (**70** in Figure 4 of Erhart).

Similarly, Schroeder and Wedman also fail to disclose the limitations of independent claim 1 of the present application not disclosed or taught by Erhart.

In view of the above, Erhart, Schroeder, and Wedman, whether considered separately or in any combination, fail to show or suggest the present invention as recited in independent claim 1 of the present application. Thus, independent claim 1 of the present application is patentable over Erhart, Schroeder, and Wedman. Dependent claim 2 is allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

III. Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 04452.015001).

Respectfully submitted,

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